UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,815	09/05/2003	Michael Paul Tankard	K315.130.101	9419

25281 7590 12/27/2004

DICKE, BILLIG & CZAJA, P.L.L.C.
FIFTH STREET TOWERS
100 SOUTH FIFTH STREET, SUITE 2250
MINNEAPOLIS, MN 55402

EXAMINER	
NGUYEN, JIMMY	
ART UNIT	**PAPER NUMBER**
2829	

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,815	TANKARD ET AL.	
	Examiner	Art Unit	
	Jimmy Nguyen	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0903*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Sorenson, Jr (US 6717397).

As to claims 1, 9, 12, Sorenson, Jr discloses (figs 1 – 3) a switched reluctance drive with a rate of change of current sensor comprising a coil for coupling the flux from a conductor in which rate of change of current is to be sensed, the coil (C1 – C14) comprising a plurality of turns (as seen in figure 1), each turn being a track (42A, 42B) on a printed circuit board (30, see figure 3) , each turn being displaced from its neighboring turn in a direction parallel to the direction of the conductor (see figure 3).

As to claim 2, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1 wherein the printed circuit board (30) has at least a first layer (32) and a second layer (34), each turn comprising a first part of the turn on the first layer (34) and a second part of the turn on the second layer (34), the first and second parts of the turn being connected by a via (44A, 44B) extending through the printed circuit board (30).

As to claim 3, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1 wherein the turns (C1 – C14) are rectangular, circular or hexagonal in shape.

As to claim 4, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1 further comprising a feature provided on the printed circuit board (10) to hold the conductor (12, 14) in place relative to the coil (C1 – C14).

As to claim 5, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1 a sensor according to claim 1 wherein the conductor (12, 14) is formed on or comprises a layer of the printed circuit board (10).

As to claim 6, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 2 wherein the conductor (12, 14) is a split conductor having at least two limbs each of which runs close to vias of either side of the coil (as seen in fig 1).

As to claim 7, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1, wherein at least two coils (C1 – C14) are provided on the pcb, the conductor extending between the two coils.

As to claim 8, Sorenson, Jr discloses (figs 1 – 3) a sensor according to claim 1 wherein each turns of the coil (C1 – C14) is of the same dimension as the other turns.

As to claim 13, Sorenson, Jr discloses (figs 1 – 3) a switched reluctance drive as claimed in claim 12 wherein the means for coupling comprises a coil (C1 – C14)

As to claims 10, 14, Sorenson, Jr discloses (figs 1 – 3) a switched reluctance drive as claimed in claim 9 wherein the output of the sensor is fed to a circuit which detects the point at which the rate of change of current crosses zero.

As to claims 11, 15, Sorenson, Jr discloses (figs 1 – 3) a switched reluctance drive as claimed in claim 10, wherein the output of the sensor is used to provided rotor position information.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Nguyen at (571) 272-1965. Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4900.

JN.
Dec 9, 2004

DAVID ZARNEKE
PRIMARY EXAMINER
12/11/04